Summary of: ASTM Symposium on Developing Consensus Standards for Measuring Chemical Emissions from Spray Polyurethane (SPF) Foam

Attendees:
Mark Mason, EPA
Xiaoyu Liu, EPA
Charles Bevington, EPA
Katherine Sleasman, EPA
Dustin Poppendieck, NIST
Melanie Biggs, CPSC
Bob Streicher, NIOSH

NIST
National Institute of Standards and Technology
U.S. Department of Commerce

SPF and Ventilation Needs

- Energy Savings Attributes
  - High R-values
  - Fills gaps and crevices
  - Reduces air infiltration

- EPA:
  - “Development of State building codes should consider the need for ventilation to maintain good air quality in the building.”

What can the ASTM Committee Do?

- Develop a methodology that industry uniformly uses to evaluate product formulations, providing reliable data to better assess the potential for exposures.

- Test methods and protocols to generate reliable data to fill knowledge gaps, including
  - What is emitted and for how long?
  - What factors impact emissions?

Meeting Summary

- Sponsored by ASTM D22.05
- Chaired by
  - Mark Mason, EPA
  - John Sebroski, Bayer Material Sciences
- Selected Technical Papers (STP) will be published
  - “In book format”
  - Submitted May 15th
  - In review
  - Available early 2016?

Summary Statistics

- 60 Attendees
  - 3 countries
  - 8 attendees from governmental agencies
- 21 Presentations
  - 7 from governmental agencies
  - 5 from laboratory equipment and testing companies
  - 7 from producers
  - 2 from consultants and trade groups

ASTM Work Item Status

- ***WK40293 – SPF Micro-chamber Test Method***
  - Reaching consensus on scope and parameters
- WK46527 – SPF Spray Booth
  - Scope issues (occupational or long term exposure)
  - Sampling location and duration issues
- WK43872 – MDI Sampling
  - Sampling and analytical challenges remain
- WK-TBA Modeling
  - Scope

Micro-chamber Test Method

- Consensus reached on several key parameters,
  - Air flow rate in the micro chamber cell
  - Minimum number of replicate cells per test
  - Test temperature and humidity
  - Surface characteristics, minimum sample depth
  - Subsampling of the SPF sample
  - Observational data
    - did the sample shrink?

Micro-chamber Test Method

- Consensus reached on parameters where more information is needed
  - Duration of a test
  - Frequency of sampling
  - Chemicals on the target list
  - Precision and bias

Emission Modeling

- Two major efforts:
  - EPA (Charles Bevington)
  - Bayer (Shen Tian)
- In ballpark for TCPP predictions
- Informal modeling task group formed
  - Advance the IAQx/iSVOC SPF prototype
    - assistance of Zhishi Guo for OPPT
  - Next steps

Full Scale Testing

- Several presentations on residential scale testing by industry
  - testing to date has focused upon occupation exposure endpoints
  - Used industrial hygiene methods or had high/unreported detection limits
- Industry is ready to collaborate to jointly plan/conduct full-scale testing that includes the application phase with IAQ perspective

Isocyanate Emissions

- Characterization during application phase
- NIOSH, with support of OSHA will coordinate with EPA/industry
  - evaluate methods to characterize fast reacting isocyanate aerosols